NATIOANAL METALLURGICAL LABORATORY

Technology Offer

Title	An improved process for the preparation of fluxed sinter through micro-pelletization utilizing waste Iron oxides fines
Description	The present invention relates to the development of a technique to produce a sinter using 100% ultra-fine waste oxide material generated in steel plant viz. LD sludge, BF flue dust and lime fines (10 to 55%) through micro-pelletization for their recycling. In this process, sintering is possible neither using any external heat nor any coke breeze. Waste material itself is the heat source. The produced sinter was likely to be suitable for using in both iron and steel making processes. Present invention also proposes gainful utilization of wastes from steel plant.
Area of Application	1. The sinter with high percentage of lime has very good dissolution property in hot metal bath. High lime containing sinter is chemically compatible to the LD converter. Owing to its good dissolution property, it has potential to generate early oxidizing slag to make the refining process faster in LD converter. 2. Low lime containing sinter exhibits very good cold handling property (shatter and tumbler) and reducibility index (RI) and reduction degradation index (RDI). Hence, it may be used as a charge material for blast furnace.
Keywords	LD sludge, BF flue dust, lime fines, micro-pelletization, sintering, utilization of waste oxides
Advantages	1. Making of hard fluxed iron oxide-lime sinter neither using any external heat nor any coke breeze. Waste materials itself is the heat source. 2. Utilizing in-situ heat of the reaction for sintering not only ensures the uniform temperature across the sinter bed but also allows to avoid the use of coke breeze for heat source as in conventional sintering process 3. Sintering of 100% ultra-fine waste material is possible through this process. 4. Produced sinters may be used as flux material in LD converter replacing lump lime, because. • They dissolve faster than lump lime in molten bath • They may form oxidizing slag at the initial stage of blow and make the refining process faster • They are not hygroscopic unlike lime, therefore the storage is easy • Dust generation during cold handling is expected to be lower than lime charging 5. The sinter contains mainly CaO-FeO-Fe2O3 and some common impurities like alumina and silica. The oxides are pre-fused and chemically combined. Therefore, its dissolution is faster than pure

	lime. 6. The sinter, particularly containing low lime, may be used as a charge material for blast furnace iron making. 7. The process enables the sintering in absence of coke breeze which in turn is cost effective.
Environmental Aspects	No harmful/hazardous effect on environment
Development Status	Feasibility is tested in the Laboratory scale
Legal Protection	
Technical specifications	Different waste materials from steel plant like LD sludge, BF flue dust, lime fines etc has been mixed in suitable proportion. Obtained mixture is micro-pelletized (2-6mm) which can withstand cold handling strength. Micro-pellets are sintered in a laboratory scale sinter pot.
Transfer Terms	Patent/Technology Licensing, Others
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